A REVIEW OF THE GENERAL FUND BUDGET AND TEST FISH FUND PROJECTS IN BRISTOL BAY FROM FISCAL YEAR 1986 TO FISCAL YEAR 1998

A Report to the Alaska Board of Fisheries
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by

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EXECUTIVE SUMMARY

The General Fund budget for Bristol Bay salmon research and management has been seriously eroded over the last thirteen years (Fiscal Year (FY) 1986 to FY 1998) by budget cuts and inflation. The FY 98 General Fund budget of $1,332.7 (in thousands of dollars), adjusted for inflation to FY 86 dollars, is down 40% below the FY 86 General Fund budget. As a result, the Department of Fish and Game has had to harvest and sell fish under the Test Fish Fund program to pay for critical projects. Expected FY 98 Test Fish Fund expenditures of $350.0 bring the total Bristol Bay budget for FY 98 up to $1682.7. This total budget, adjusted to FY 86 dollars, is still down 17% below the FY 86 budget.

All in-river and district test fisheries as well as catch sampling and a portion of the cost of Ugashik Smolt and Bristol Bay Limnology Studies are funded by Test Fish Funds which are authorized by the Alaska Legislature but are unpopular with many Bristol Bay fishermen. The time and energy spent by Department staff to generate revenue through fish sales seriously detracts from the Department's ability to perform its critical research and management functions. Unfortunately, under the current budgetary climate, the Department has no other means of paying for those projects.

In order to prevent loss of important projects not shifted over to Test Fish Funds, the private sector and local governments have had to fully, or partially, fund projects such as Port Moller test fishery, Ugashik Smolt, and Bristol Bay Limnology Studies. Despite the sale of fish and contributions from the public, many important projects such as Naknek R., Nuyukuk R., and Wood R. Smolt projects, Branch River Tower, Eastside and Westside Bouys and Markers have been lost altogether. Projects like Nuyukuk Tower and Bristol Bay Coho are only sporadically funded.

The increasing complexities of Bristol Bay fisheries make it necessary for the program to improve dramatically over what it was in FY 86 if the Department is to sustain healthy salmon populations and meet the current needs of Bristol Bay fishermen. In order to eliminate the need to harvest and sell fish, up to $350.0 additional General Fund dollars would be needed. In order to eliminate fish sales and adequately improve the program to meet current needs and ensure sustainability of the salmon resources would require at least an additional $1.5 million per year, or about one percent of the average ex-vessel value of the fishery.

INTRODUCTION

The purpose of this report is to first describe the erosion due to inflation and budget cuts on the Bristol Bay salmon research and management budget over the last 13 years from Fiscal Year (FY) 1986 to FY 1998. Second, is to describe the impacts to the program and how the Region has offset some of this erosion of the General Fund (GF) budget by shifting projects over to Test Fish (TF) Funds and funding by the private sector. And finally, to indicate some potential approaches to future funding.

BUDGET HISTORY

During FY 86 (Table 1) the total Bristol Bay budget was $1450.0 (all budget figures are in thousands of dollars) of General Funds and $0.0 Test Fish Funds. This situation persisted until FY 88 when the General Fund budget was cut dramatically by about 27% down to $1069.4 and that reduction was partially offset with money from the Test Fish Fund of $159.8.

Test Fish Funds are actually an authorization from the legislature to spend money which must be repaid through the harvest and sale of fish. Starting in FY 88, the legislature made a conscious decision to shift projects over to Test Fish Funds as a means of reducing General Fund expenditures. Test fishing projects have occurred in Bristol Bay since statehood, but prior to FY 88 they were paid for by General Funds.

Over the next ten years the General Fund budget grew slowly back to the FY 98 level of $1,332.7 while Test Fish Fund expenditures fluctuated between $250.6 and $464.7. The current FY 98 combined General Fund budget and Test Fish Fund expenditure is expected to total $1682.7. This information is presented graphically in Figure 1 which shows the various funds relative to each other and how they have changed over time. In actual dollars, the total budget has been relatively stable for the last thirteen years.

The effects of inflation on this budget (Table 2) change the situation dramatically, however. Since FY 86 inflation (based on the Anchorage Consumer Price Index) has totaled approximately 39 1/2 %. Our FY 98 General Fund budget of $1332.7 is now worth only $955.2 in FY 86 dollars. General Fund purchasing power has eroded to 60% of the FY 86 budget level. Similarly inflation erodes our Test Fish Fund projects as well. The FY 98 expected Test Fish Fund expenditure of $350.0, adjusted for inflation, equals $250.0 in FY 86 dollars for a total combined budget of only $1206.1, which is still only 83% of the FY 86 budget. Figure 2 shows this erosion graphically. Even the growth of Test Fish Fund expenditures since FY 86 has failed offset the significant budgetary impacts of reductions and inflation.

This erosion has occurred in the face of a fishery which has grown steadily more complex. In the years before FY 86 there were no set gill net allocation plans, no Naknek or Wood River special harvest areas plans, and no major mixed stock fishery issues such as the

TABLE 1. HISTORY OF BRISTOL BAY SALMON BUDGET

	Dollars (Not adjusted for inflation)		
Fiscal Year	General Fund	Test Fish	Total
1986	1450.0	0.0	1450.0
1987	1404.7	0.0	1404.7
1988	1069.4	159.8	1229.2
1989	1294.3	358.6	1652.9
1990	1334.1	250.6	1584.7
1991	1331.1	284.8	1615.9
1992	1263.0	279.1	1542.1
1993	1215.5	296.0	1511.5
1994	1245.8	307.1	1552.9
1995	1306.7	464.7	1771.4
1996	1331.1	430.2	1761.3
1997	1307.4	279.6	1587.0
1998	1332.7	350.0	1682.7

FIGURE 1. HISTORY OF BRISTOL BAY SALMON BUDGET NOT ADJUSTED FOR INFLATION

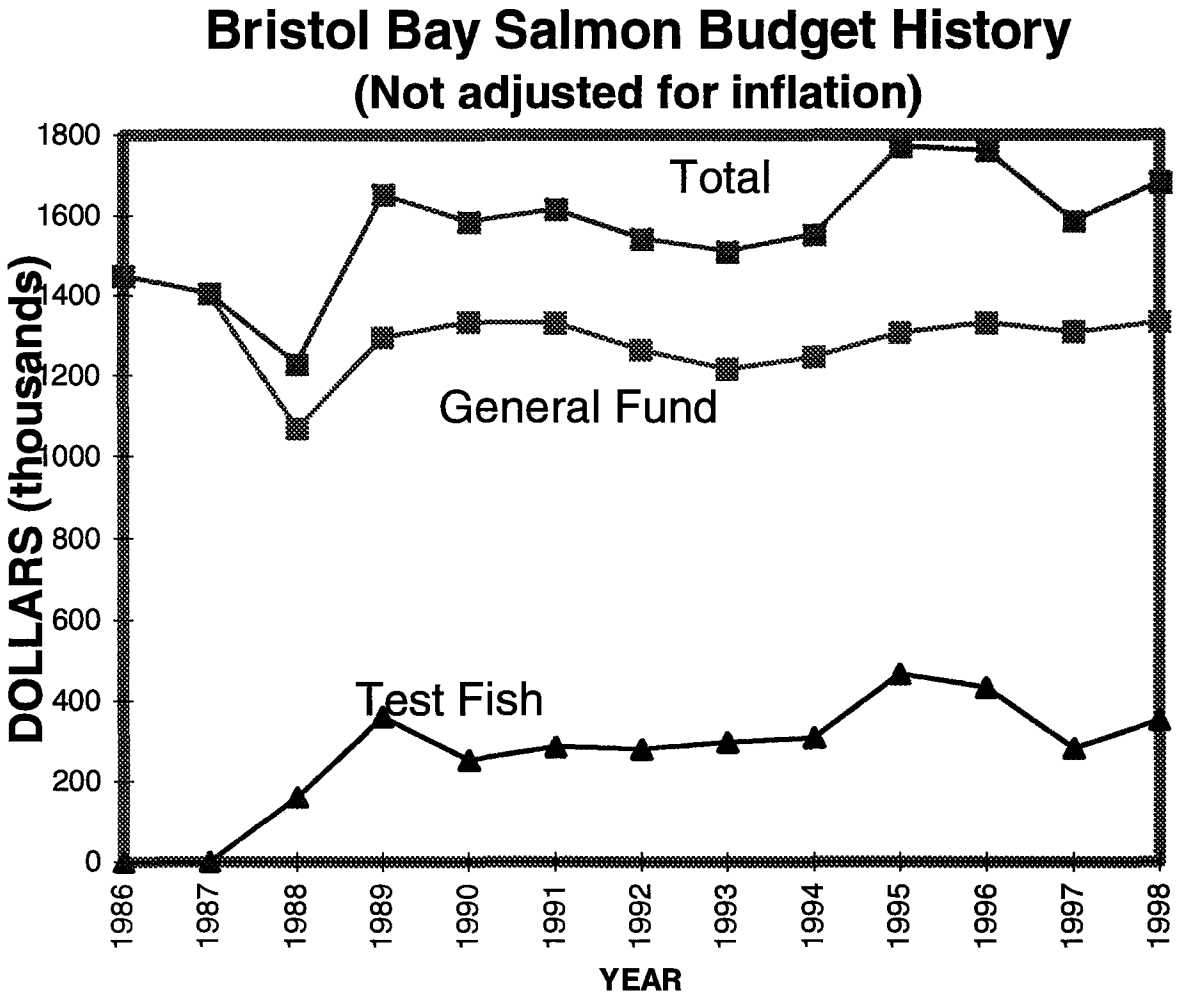
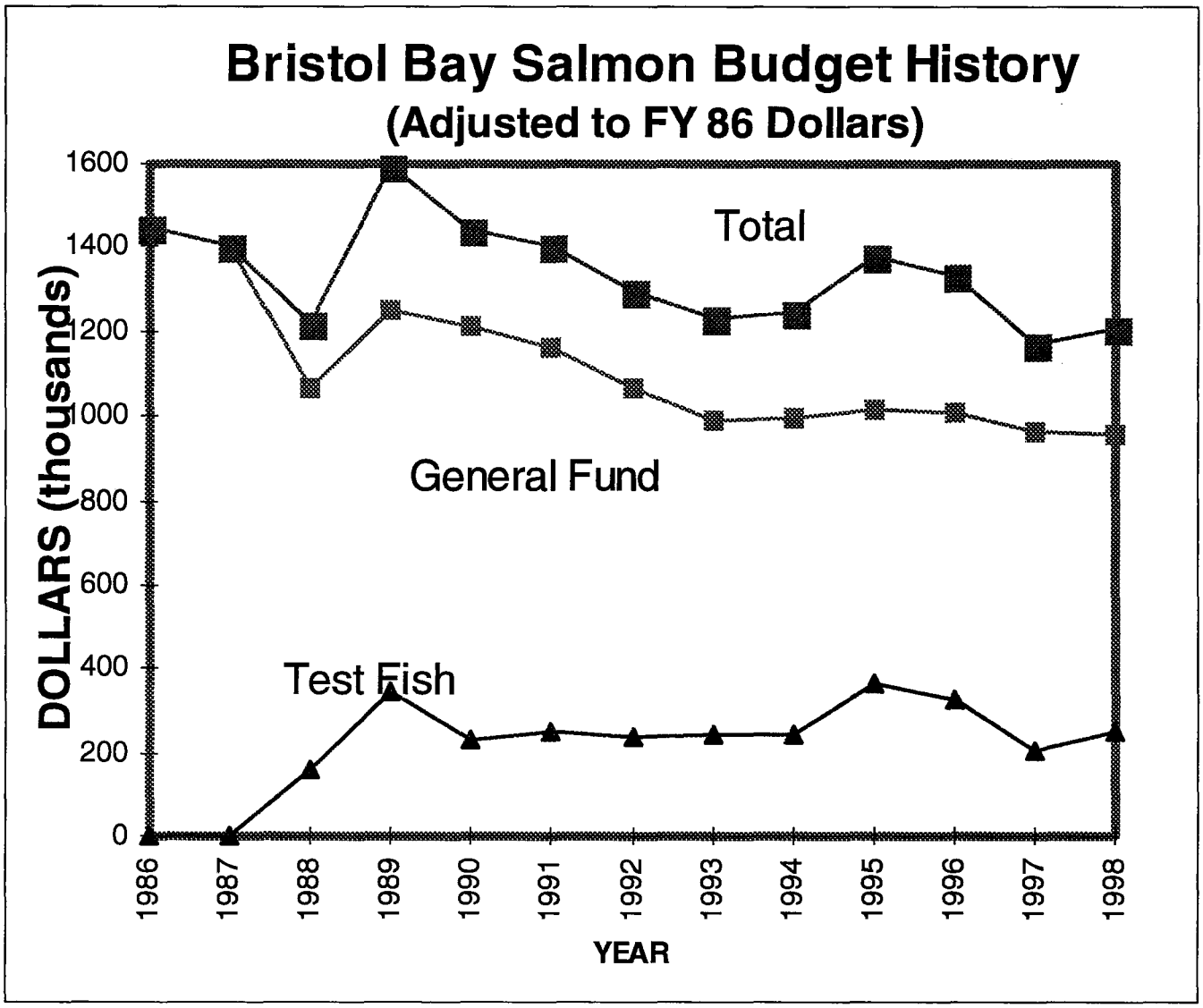


TABLE 2. HISTORY OF BRISTOL BAY SALMON BUDGET ADJUSTED FOR INFLATION

		FY 86 Dollars (Adjusted for inflation)			
Fiscal Year	'86 to '98 Adjust.	General Fund	Test Fish	Total	Percent FY 86
1986	1.000	1450.0	0.0	1450.0	100.0
1987	1.004	1399.5	0.0	1399.5	96.5
1988	1.007	1061.5	158.6	1220.1	84.1
1989	1.036	1249.1	346.1	1595.2	110.0
1990	1.100	1212.6	227.8	1440.4	99.3
1991	1.150	1157.2	247.6	1404.8	96.9
1992	1.189	1062.0	234.7	1296.7	89.4
1993	1.226	991.2	241.4	1232.5	85.0
1994	1.252	994.8	245.2	1240.0	85.5
1995	1.288	1014.1	360.7	1374.8	94.8
1996	1.324	1005.6	325.0	1330.5	91.8
1997	1.359	962.0	205.7	1167.8	80.5
1998	1.395	955.2	250.9	1206.1	83.2

FIGURE 2. HISTORY OF BRISTOL BAY SALMON BUDGET ADJUSTED FOR INFLATION



harvest of Kvichak River bound sockeye salmon in the Egegik District. The addition of these management requirements and issues since FY 86 has increased the demand for management information and precision at a time when the program that provides that information and precision has seriously eroded. As a result, many issues in Bristol Bay have not been addressed to the satisfaction of many participants in the fishery.

Adjusting the budget to FY 98 dollars (Table 3), demonstrates that the current FY 98 budget of $1682.7 would have to increase by $341.3 to $2023.0 just to keep it at the FY 86 level.

Comparing the budget to the ex-vessel value of the fishery, demonstrates that this is a very efficient program (Table 4). General Fund expenditures average 0.93% of the ex-vessel value which averages $151.5 million dollars per year. The total Test Fish Fund expenditure averages 0.19% of the ex-vessel value - for a total budget which averages only 1.12% of the ex-vessel value of the fishery. Very few fisheries anywhere are managed at this level of expenditure relative to their value.

Of course ex-vessel value varies as prices and catches change each year (Table 5). General Fund expenditures have varied from a high of 2.09% of the ex-vessel value, to a low of 0.65% of the ex-vessel value. Test Fish Funds have varied from a high of 0.45% to a low of 0% of the ex-vessel value and the total expenditures vary from a high of 2.53% to a low of 0.78% of ex-vessel value.

PROGRAM REDUCTIONS

A program cannot lose 40% of its General Fund purchasing power and 17% of its overall purchasing power without some impact on the program and the public. There have been significant losses from the Bristol Bay program over the last 13 years (Figure 3) and significant impacts on the public.

Projects cut out of the program include Wood R., Naknek R., and Nuyukuk R. smolt projects; Eastside and Westside buoys and markers; and Branch River tower. Nuyukuk tower and Bristol Bay coho were lost for several years, but are currently being conducted on a short term basis using Fish & Game Funds which run out next year.

Projects which would have been lost but were retained by shifting them over to Test Fish Funds include all catch sampling, 44% of Ugashik smolt, and a seasonal FBI research biologist who is an integral part of the catch sampling program.

Funding for several projects was taken over by the private sector or local government including the Port Moller Test Fishery funded by processors, district transfer office hours funded by processors, and approximately 56% of the Ugashik Smolt project for which funding is shared by Lake and Peninsula Borough and the City of Pilot Point. The

TABLE 3. HISTORY OF BRISTOL BAY SALMON BUDGET ADJUSTED TO FY 98 DOLLARS

		FY 98 Dollars (Adjusted for inflation)			
Fiscal Year	'98 to '86 Adjust.	General Fund	Test Fish	Total	Percent FY 98
1986	1.395	2023.0	0.0	2023.0	120.2
1987	1.359	1909.0	0.0	1909.0	113.4
1988	1.324	1415.6	211.5	1627.2	96.7
1989	1.288	1667.7	462.1	2129.8	126.6
1990	1.252	1670.7	313.8	1984.6	117.9
1991	1.226	1632.4	349.3	1981.7	117.8
1992	1.189	1502.0	331.9	1833.9	109.0
1993	1.150	1398.2	340.5	1738.6	103.3
1994	1.100	1370.6	337.9	1708.5	101.5
1995	1.036	1354.0	481.5	1835.5	109.1
1996	1.007	1341.0	433.4	1774.4	105.4
1997	1.004	1312.3	280.6	1592.9	94.7
1998	1.000	1332.7	350.0	1682.7	100.0

TABLE 4. BRISTOL BAY SALMON BUDGET - PROPORTION OF EX-VESSEL VALUE

	Dollars (Not adjusted for inflation)				% Of Ex-Vessel $		
Fiscal Year	General Fund	Test Fish	Total	Ex-Vessel Value	General Fund	Test Fish	Total
1986	1450.0	0.0	1450.0	141063.0	1.03	0.00	1.03
1987	1404.7	0.0	1404.7	135667.0	1.03	0.00	1.04
1988	1069.4	159.8	1229.2	176858.0	0.60	0.09	0.70
1989	1294.3	358.6	1652.9	177787.0	0.73	0.20	0.93
1990	1334.1	250.6	1584.7	202259.0	0.66	0.12	0.78
1991	1331.1	284.8	1615.9	106384.0	1.25	0.27	1.52
1992	1263.0	279.1	1542.1	193745.0	0.65	0.14	0.80
1993	1215.5	296.0	1511.5	154411.0	0.79	0.19	0.98
1994	1245.8	307.1	1552.9	140905.0	0.88	0.22	1.10
1995	1306.7	464.7	1771.4	185903.0	0.70	0.25	0.95
1996	1331.1	430.2	1761.3	140872.0	0.94	0.31	1.25
1997	1307.4	279.6	1587.0	62700.0	2.09	0.45	2.53
1998	1332.7	350.0	1682.7				
TOTAL:	16885.8	3460.5	20346.3	1818554.0			
	AVERAGE=			151546.2	0.93	0.19	1.12

TABLE 5. BRISTOL BAY SALMON BUDGET AS A PROPORTION OF THE EX-VESSEL VALUE

FY 1986 TO FY 1997

FUNDING SOURCE	% OF EX-VESSEL HIGH %	LOW %	AVERAGE %
GENERAL FUND	2.09	0.65	0.93
TEST FISH FUNDS	0.45	0.00	0.19
TOTAL BUDGET	2.53	0.78	1.12

FIGURE 3. BRISTOL BAY SALMON BUDGET PROJECT LOSSES

PROJECTS CUT FROM GENERAL FUND

SHIFTED TO TEST FISH FUNDS	LOST FROM PROGRAM
EASTSIDE CATCH SAMPLING	WOOD RIVER SMOLT
WESTSIDE CATCH SAMPLING	NAKNEK SMOLT
44% UGASHIK SMOLT	NUYUKUK SMOLT
SEASONAL RESEARCH FB I	NUYUKUK TOWER *
	BRISTOL BAY COHO *
	EASTSIDE BOUYS AND MARKERS
TAKEN OVER BY PUBLIC	WESTSIDE BOUYS AND MARKER
	BRANCH RIVER TOWER
PORT MOLLER TEST FISHERY	
DISTRICT TRANSFER OFFICE HOURS	* = SHORT TERM FUNDING
56% UGASHIK SMOLT	ENDS NEXT YEAR

Department has been very selective about shifting projects over to Test Fish Funds and has not simply increased its harvest of fish to pay for every lost project.

DESCRIPTION OF TEST FISH FUND PROGRAM

As previously mentioned Test Fish Funds are actually an authorization from the Alaska Legislature to expend monies which must be repaid through the harvest and sale of fish. Starting in FY 88, the Legislature made a conscious decision to shift projects over to Test Fish Funds as a means of reducing General Fund expenditures. Test fishing projects have occurred in Bristol Bay since statehood, but prior to FY 88 they were paid for by General Funds.

Test Fish Funds are more accurately referred to as "Designated Program Receipts". This is a category of funds where the program itself is required to generate receipts adequate to pay its cost. The term Test Fish Funds is used to designate those program receipt projects where fish are harvested to generate to necessary revenue. Other designated program receipt projects generate revenue in other ways. For example, fishermen are required in some areas to pay a fee for set net or crab pot bouy identification stickers. This fee covers the cost of purchasing and distributing the identification stickers.

Currently Test Fish Funds are used to pay for the in-river test fisheries at Ugashik, Egegik, Kvichak, and Igushik Rivers; the District test fisheries at Ugashik, Egegik, Naknek/Kvichak, and Nushagak Districts (these projects help managers judge the abundance and movement of fish through the districts and into the rivers - resulting in the high level of management precision experienced throughout Bristol Bay); all the catch sampling; and finally the Ugashik Smolt project and Bristol Bay Limnology Studies. Only the district test fisheries generate enough revenue to pay for themselves. The in-river test fisheries do not generate sufficient revenue to pay for themselves. For example, the Ugashik River test fishery costs about $20.0 per year and generates only about $4.5 from sale of fish. These projects are very important and give managers 2 to 7 days advance notice of fish moving into the rivers. It is largely through these projects that managers can ensure escapement goals are met. Catch sampling, smolt, and limnology projects do not harvest any fish which would generate revenue to repay their expenses.

In order to generate the revenue that pays for the in-river test fisheries, catch sampling, Ugashik Smolt, and the Bristol Bay Limnology Studies the Department has had to harvest fish in excess of that normally caught by purely test fishing type operations. The Department fully realizes that the harvest of these fish reduces the available harvest in the commercial fishery. Therefore we make the commitment to harvest these fish as efficiently as possible so that we catch the least possible amount of fish to generate the needed revenue. First, we fund only projects which are extremely important, and second, as we have added projects to the Test Fish Fund in recent years we have concentrated on projects that can be funded cooperatively, such as Ugashik Smolt, and Bristol Bay Limnology Studies.

For the latter two projects, the Department contributes about 44% of the budget from TF Funds and local government or federal agencies contribute the rest. Ugashik Smolt is funded by Lake and Peninsula Borough and the City of Pilot Point and in the case of Bristol Bay Limnology Studies, the contributors are Lake and Peninsula Borough and the U.S. Fish and Wildlife Service. We are also working with Bristol Bay Borough, Naknek Village Council, and the National Park Service to co-operatively fund the Naknek River smolt project. In this way we leverage our test fish funds and get more projects for the fish caught. Only $40.0 of Test Fish Funds provides projects which would otherwise cost the Department about $90.0.

Another approach we have implemented during the last two seasons is to contract directly with processors for a portion of the test fish catch needed to make up revenues. This contract is competitively bid among all processors and requires the processors to pay all vessel and observer logistics cost. This approach has reduced expenditures and freed up staff time which is necessary to help manage and research fisheries.

Under the previous contracting system, the department contracted individually with as many as eighteen vessels. One staff person was required full time in the summer just to contract and organize these test fish vessels. At the same time up to 50% of the revenue generated was needed to pay the test fishing boats. Also with up to eighteen test fish vessels fishing legally outside district boundaries and at irregular times, a substantial enforcement effort was required to ensure that other vessels were not fishing illegally under the cover of the legitimate revenue generation and test fishing activities. Changing to the direct contract has made the program much more efficient and freed up valuable staff time. Going back to direct contracting with individual boats would require the Department to more than double the number of fish it catches and sells. Unfortunately, these changes have also been somewhat controversial.

The Test Fish Fund revenue generating contract is normally conducted by two to four drift gill net vessels. Many Bristol Bay fishermen were concerned this summer when the Test Fish Fund contractor requested, and was granted, permission to try using a purse seine vessel in addition to a gill net vessel to help harvest fish. The Department approved use of a purse seine vessel for four reasons:

1. To test whether it would be more efficient and therefore ultimately generate a better price to the State;

2. To test whether or not it could produce better quality fish and therefore ultimately generate a better price to the State. Both these were aimed at reducing the number of fish harvested;

3. If the purse seine vessel was successful and became an ongoing operation, it would provide a means of obtaining unbiased size and age composition data for Bristol Bay as opposed to fish caught in gill nets, which are highly size selective; and finally

4. Enforcement activities by Fish and Wildlife Protection would be simplified.

Because of the public outcry, the Test Fish contractor stopped using the purse seine vessel seine before they caught sufficient fish to assess the first three points adequately. Because of the lack of public support for using a more efficient gear type such as a purse seine, the Department has committed to use only gill net vessels in the future. The benefits of other gear types do not warrant jeopardizing the Test Fish Fund program.

Many fishermen expressed their opinion that the State should fully fund the Bristol Bay research and management program with General Fund dollars and not harvest fish to pay for the program. Quite frankly, I agree with them. Having to harvest fish to pay for the research and management program wastes valuable staff time and erodes public confidence in the Department. Unfortunately, at the present, there is no other method of funding these projects and loss of the information provided would be devastating to Bristol Bay fisheries management. Such program losses could potentially cost Bristol Bay fishermen millions of dollars per year in lost harvest and productivity through escapements substantially over, or under, the established goals.

To put the magnitude of this Test Fish Fund revenue generating contract in perspective, during 1997 the Department harvested approximately $180,000 worth of fish to pay for the non-revenue generating Test Fish Fund projects. This amount equates to about $62 per permit holder or about 0.3% of the ex-vessel value of the 1997 catch. My professional opinion is that this is an excellent value since it provides all of the in-river test fisheries, catch sampling, Ugashik Smolt, and Bristol Bay Limnology Studies. If anyone can find a better value for $62 anywhere in Alaska, they should buy it.

In order to better communicate with a broader cross-section of the fishing industry and help ensure support for the Test Fish Fund program, we are establishing the Bristol Bay Test Fish Advisory Group which will include the local advisory committees as well as major fishing organizations from each of the districts. We will also be preparing and presenting and annual Test Fish Fund report along with our other fishery reports. In order to address this need, the Department has prepared a document entitled *FY 98 Test Fisheries And Test Fish Funds In The Central Region*, commonly known as the "redbook" (Appendix 1). Both of these actions are suggestions which we received from the Bristol Bay fishing public.

FUTURE BUDGET

What does the future hold for the Bristol Bay budget? Inflation is expected to continue eroding the budget during FY99. For FY98, the total combined budget is $1682.7. With 2.9% inflation, the loss to inflation will be about $48.8 - or about $32.6 lost from the General Fund and $16.2 lost from the Test Fish Fund.

To give an idea of what this means in terms of potential projects lost, here are the costs of some common General Fund projects (Figure 4):

Kvichak Smolt	$42.5
Egegik Smolt	$39.4
Igushik Tower	$29.3
Nushagak Sonar	$59.7

Here are the costs of some common Test Fish Fund projects:

Igushik River Test Fish	$21.8
West Side Catch Sampling	$18.8
Bristol Bay Limnology Studies	$20.0

The Bristol Bay program is facing the loss of a General Fund project and a Test Fish Fund project every year unless we get additional general funds, we transfer more projects to Test Fish Funds, or we get other new sources of revenue (Figure 5).

One option for the future is to replace Test Fish Funds with General Funds. To eliminate all need for the Department to harvest and sell fish would require about $350.0 in General Funds, but would result in no program improvements and would not offset future inflation. To simply eliminate the need to harvest fish to pay for the non-revenue generating Test Fish Fund projects, an additional $200.0 in General Funds would be needed. Again this would not result in any program improvements and would not offset any future inflation.

To address the need for program improvements, the Department has prepared the document entitled *A Program For Improving Management And Research Of Bristol Bay Salmon*, commonly known as the "bluebook" (Appendix 2). The purpose of this document is to identify those projects needed to improve management and research for salmon in Bristol Bay. These projects total a little over $1.5 million dollars per year. This program addresses the desire to eliminate the need for the Department to harvest fish as well as the need to improve the program to deal increasingly complex fisheries and better understand and forecast salmon production in Bristol Bay.

Finally, as an example of potential new revenue sources to fund research and management, we present the idea of the Salmon Enhancement Tax. On average such a tax at 1% would generate $1.5 million dollars per year which would eliminate the need to generate revenues through fish harvest as well as provide substantial additional revenue for improving research and management. Any other revenue source of similar magnitude would have similar benefits.

FIGURE 4. EFFECTS OF FUTURE INFLATION ON BRISTOL BAY SALMON BUDGET

EFFECTS OF INFLATION

FY 98 TOTAL BUDGET = $1682.7

2.9 % INFLATION = $48.8 LOST PURCHASING POWER EACH YEAR

GF = $32.6 LOST; TF = $16.2 LOST

WHAT IS THE IMPACT OF $48.8 LOSS EACH YEAR?

KVICHAK SMOLT = $42.5

EGEGIK SMOLT = $39.4

IGUSHIK TOWER = $29.3

NUSHAGAK SONAR = $59.7

IGUSHIK TEST FISH = $ 21.8

WESTSIDE CATCH SAMPLING = $18.8

BB LIMNOLOGY STUDIES = $20.0

FIGURE 5. OPTIONS AND APPROACHES FOR THE BRISTOL BAY SALMON BUDGET

BUDGET OPTIONS AND APPROACHES

ACTION	AMOUNT	COMMENT
Obtain GF to replace all TF	350.0	No Program Improvement
Obtain GF to replace non-revenue generating TF	200.0	No Program Improvements
Bristol Bay BLUE BOOK	1646.5	Replace TF and Improve Program
Salmon Enhancement Tax		
1%	1515.5	Replace TF and Improve Program
2%	3038.4	
3%	4557.6	

APPENDIX 1

FY 98 TEST FISHERIES AND TEST FISH FUNDS IN THE CENTRAL REGION

TEST FISH FUND PROJECT REDBOOK

FY 1998
TEST FISHERIES AND TEST FISH FUNDS IN THE CENTRAL REGION

This document outlines the use of Test Fish Funds in Central Region for FY 98. Each project which either generates or expends Test Fish Funds is described, including its primary objective, and how the sale of fish and contracting of vessels is handled for that project.

Use of the Test Fish Fund is authorized by the Alaska State Legislature. The concept of the test Fish Fund is that revenues are generated from the sale of fish to offset the expenses of certain projects designated as Test Fish Fund projects. Projects included in this category include traditional "test fishing" type projects such as the Bristol Bay in-river and District test fish projects, the Cook Inlet offshore test fish project, and the Prince William Sound Southwest District test fishery. As part of their data collection, these projects harvest fish which are in turn sold to offset expenses and prevent waste. Also included are projects such as catch sampling, stock assessment surveys, and fishery monitoring. This latter category of projects has been added during the last ten years because of general fund cuts due to the effects of inflation on stable or reduced budgets.

Many important projects, such as catch sampling, are funded by Test Fish Funds but do not, and cannot, generate any revenue. Other very important projects, in-river test fisheries for example, cannot generate sufficient revenue to pay for themselves without compromising their scientific purposes. For these reasons some projects are required to generate more revenue in order to pay for those that cannot and some projects are not utilized to the extent possible because they cannot generate sufficient revenue.

Because these projects are funded by the harvest of fishery resources that would otherwise be available to be harvested by the commercial fishery, it is incumbent upon the Department to look for the most efficient methods to harvest and sell fish as well as the

most cost effective means to operate projects which rely on Test Fish Funds. It is also incumbent on the Department not to harvest fishery resources when stocks are depressed or when additional harvest is not prudent or necessary. For this reason some projects may not operate every year, or may not generate revenue every year.

It is the purpose of this document to describe in detail the test fishing program in Central Region so that budget managers can operate this program in the most efficient manner.

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SALMON TEST FISH PROJECTS

I. BRISTOL BAY

A. In-River Test Fish Projects

Project Name: Kvichak River Test Fish

Budget Code: 11100721-11127419
Location: Kvichak River
Timing: Late June - Early July
Contact: Drew Crawford

Primary Objective: To provide real time estimates of the number of sockeye salmon adults which have escaped the commercial fishery and entered the Kvichak River. This information is used in-season by the management biologist to control the commercial harvest and achieve the escapement goal.

Catch and Sales: ADF&G personnel catch salmon in the Kvichak River in a 25 fathom drift gill net. Fish are sold by ADF&G personnel in the name of the State under a CFEC permit to various processors in the King Salmon/Naknek area who are convenient and/or available. The State is paid directly by the processors. The State receives full value for the fish and is paid grounds price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increases their purchase price. It is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

1994-97 Average Revenue: $4.2
FY 98 Authorization: $33.3
FY 97 Authorization: $30.2
FY 97 Expenditure: $24.5
FY 96 Expenditure: $33.3

Project Name: Egegik River Test Fish

Budget Code: 11100721-11127420
Location: Egegik River
Timing: Late June - Early July
Contact: Drew Crawford

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Egegik River. This information is used in-season by the management biologist to control the commercial harvest and achieve the escapement goal.

Catch and Sales: ADF&G personnel catch adult salmon in the Egegik River in a 25 fathom drift gill net. Fish are sold by ADF&G personnel in the name of the State under a CFEC permit to various processors in the Egegik area who are convenient and/or available. The State is paid directly by the processors. The State receives full value of the fish and is paid grounds price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increases their purchase price. It is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

1994-97 Average Revenue: $2.7
FY 98 Authorization: $31.9
FY 97 Authorization: $32.2
FY 97 Expenditure: $25.2
FY 96 Expenditure: $38.9

Project Name: Ugashik River Test Fish

Budget Code: 11100721-11127421
Location: Ugashik River
Timing: Late June - Early July
Contact: Drew Crawford

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Ugashik River. This information is used in-season by the management biologist to control the commercial harvest and achieve the escapement goal.

Catch and Sales: ADF&G personnel catch adult salmon in the Ugashik River in a 25 fathom drift gill net. Fish are sold by ADF&G personnel in the name of the State under a CFEC permit to various processors in the Ugashik Village and Pilot Point area who are convenient and/or available. The State is paid directly by the processors. The State receives full value of the fish and is paid grounds price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increases their purchase price. It is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

1994-97 Average Revenue: $4.5
FY 98 Authorization: $29.0
FY 97 Authorization: $30.3
FY 97 Expenditure: $21.0
FY 96 Expenditure: $20.9

Project Name: Igushik River Test Fish

Budget Code: 11100721-1127423
Location: Igushik River
Timing: Late June - Early July

Contact: Jim Miller

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Igushik River. This information is used in-season by the management biologist to control the commercial harvest and achieve the escapement goal.

Catch and Sales: ADF&G personnel catch adult salmon in the Igushik River in a 25 fathom drift gill net. Fish are sold by ADF&G personnel in the name of the State under a CFEC permit to various processors who have tenders at the mouth of the Igushik River who are convenient and/or available. The State is paid directly by the processors. The State receives full value of the fish and paid grounds price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increases their purchase price. It is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

1994-97 Average Revenue: $2.4
FY 98 Authorization: $21.9
FY 97 Authorization: $20.8
FY 97 Expenditure: $18.3
FY 96 Expenditure: $19.0

B. Commercial Fishing District Test Fish Projects

Project Name: Eastside District Test Fish

Budget Code: 11100721-1127422
Location: Naknek-Kvichak, Egegik, and Ugashik Districts
Timing: Late June - Early July
Contact: Jeff Regnart, Keith Weiland

Primary Objective: To provide real time estimates of sockeye salmon distribution and abundance in Eastside fishing districts. This information is used in-season by the management biologist to regulate the commercial harvest and achieve escapement goals.

Catch and Sales: Commercial fishing boats are chartered with a Short Term Vessel Charter to perform the test fishing in each of the three Eastside Bristol Bay commercial fishing districts. A list of interested fishermen is compiled prior to the fishing season and test fish boats are chosen from the list based on their availability. Test fishermen are paid directly by the State based on the terms of the Short Term Vessel Charter. A Fish and Game observer is aboard the boat during test fish operations. The fish are sold by ADF&G personnel under a CFEC permit. Fish are generally sold to the processor who normally buys from the contracted fisherman. If the contracted fisherman's processors is unavailable then a processor who is convenient and/or available is used. The State is paid directly by the processors. The State receives full value of the fish and is paid grounds

price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increases their buying price.

1994-97 Average Revenue: $29.6
FY 98 Authorization: $50.0
FY 97 Authorization: $70.5
FY 97 Expenditure: $36.5
FY 96 Expenditure: $ 38.7

Project Name: Nushagak District Test Fish

Budget Code: 11100721-1127424
Location: Nushagak District
Timing: Late June - Early July
Contact: Tom Brookover

Primary Objective: To provide real time estimates of sockeye salmon distribution and abundance in the Nushagak District. This information is used in-season by the management biologist to regulate the commercial harvest and achieve escapement goals. The project also provides for an observer to monitor subsistence Chinook catches at Lewis Point to aid in management of the commercial Chinook fishery.

Catch and Sales: This project has been changed and improved for FY 98. A commercial fishing boat under contract for the season fishes throughout the District on a regular basis. The contract is awarded by open competitive bid and the boat is paid directly by the state according to the terms of the contract. A Fish and Game observer is aboard the boat during test fish operations. The fish are sold by ADF&G personnel under a CFEC permit. Fish are generally sold to the processor who normally buys from the contracted fisherman. If the contracted fisherman's processors is unavailable then a processor who is convenient and/or available is used. The State is paid directly by the processors. The State receives full value of the fish and is paid grounds price after the fishing season. The State receives price adjustments later in the year similar to the fishermen if the processor in question increase their buying price.

1994-97 Average Revenue: $13.5
FY 98 Authorization: $49.0
FY 97 Authorization: $48.6
FY 97 Expenditure: $35.5
FY 96 Expenditure: $11.2

Project Name: Stock Id Test Fish

Budget Code: 1100721-1127417
Location: Naknek-Kvichak, Egegik, and Ugashik Districts
Timing: Late June - Early July
Contact: Bev Cross

Primary Objective: To generate revenue for the other test fish projects in Bristol Bay which provide essential information to management biologists, but are unable to harvest sufficient fish to pay for their operations.

Catch and Sales: Adult salmon are harvested by commercial fishing vessels from a variety of locations in the Eastside Bristol Bay commercial fishing districts. All Bristol Bay processors who have filed an Intent to Operate are sent a bid solicitation for the opportunity to purchase a specified number of pounds of sockeye salmon. Part of the bid requirement is to not only purchase the fish, but to provide the boats, skippers, nets, equipment, fuel, and logistics to harvest the fish. The bid is awarded to the processor who submits a bid for the highest price per pound. ADF&G personnel are onboard the fishing vessels during test fish operations. The fish are sold by ADF&G personnel under a CFEC permit to the processor who was awarded the bid. The State is paid directly by the processor based on the number of pounds of fish harvested and the price outlined in the successful bid. Actual costs for this projects are now about $110.0 per year since the elimination of payment for short term vessel contracts. Excess revenue generated by this project pays for: 1) the catch sampling and limnology projects which generate no revenue and 2) the in-river and commercial district test fisheries which do not generate sufficient revenue.

1994-97 Average Revenue: $323.6
FY 98 Authorization: $96.5
FY 97 Authorization: $190.9
FY 97 Expenditure: $63.5
FY 96 Expenditure: $230.0

C. Catch Sampling Projects

Project Name: West Side Catch Sampling

Budget Code: 11100721-1127425
Location: Nushagak and Togiak Districts
Timing: Late June - Early July
Contact: Jim Miller

Primary Objective: To collect sockeye, Chinook, and chum salmon length, weight, sex, and scale samples from the Nushagak and Togiak Districts commercial catches and test fish catches. Samples are collected from dockside processors located in Dillingham, Ekuk, and Togiak and from test boats. Data are used to estimate age, sex, and size composition of commercial and test fish catches.

Catch and Sales: No fish are caught or sold by this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $19.4
FY 97 Authorization: $19.4

FY 97 Expenditure: $27.1
FY 96 Expenditure: $16.7

Project Name: East Side Catch Sampling

Budget Code: 11100721-1127418
Location: Naknek-Kvichak, Egegik, and Ugashik Districts
Timing: Late June - Early July
Contact: Bev Cross

Primary Objective: Collect sockeye weight, sex, and scale samples from Naknek-Kvichak, Egegik, and Ugashik Districts commercial catches. In addition, scale processing personnel are coded to this budget. These individuals process, age, and compile all scales from Bristol Bay commercial and test fish catches.

Catch and Sales: No fish are caught or sold by this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $30.0
FY 97 Authorization: $58.9
FY 97 Expenditure: $28.0
FY 96 Expenditure: $21.5

D. Smolt and Limnology Projects

Project Name: Ugashik Smolt

Budget Code: 11100721-11274xx
Location: Ugashik River
Timing: May
Contact: Drew Crawford

Primary Objective: This project is being transferred to Test Fish Funds for FY 98 and is currently being operated in cooperation with the City of Pilot Point and the Lake and Peninsula (L&P) Borough. General Funds for this project were cut from the budget in FY 92. After not operating in 1992, the project was restarted with a combination of CIP funds and contributions from the City of Pilot Point the L&P Borough. For FY 98, the CIP are no longer available and Test Fish Funds are being used to cover approximately one third of the cost. The objective of the project is to estimate the numbers of smolt migrating out of the Ugashik River in order to help forecast the return of adults. This project also works in concert with the limnology studies detailed below to help develop a better understanding of the salmon production capacity of the Ugashik Lakes.

Catch and Sales: No fish are caught or sold by this project.

1994-97 Average Revenue: $0.0

FY 98 Authorization: $20.0
FY 97 Authorization: $0.0
FY 97 Expenditure: $0.00
FY 96 Expenditure: $0.00

Project Name: Bristol Bay Limnological Studies

Budget Code: 11100721-11274xx
Location: Bristol Bay Lakes
Timing: May - October
Contact: Dana Schmidt

Primary Objective: This project is new for FY 98 and is being done in cooperation with the Lake and Peninsula Borough and the U.S. Fish and Wildlife Service for the purpose of collecting and analyzing data concerning limnological factors which may govern sockeye salmon production in Ugashik and Becharof Lakes. These lakes produce sockeye salmon returning to the Egegik and Ugashik District commercial fisheries. This information will help evaluate the capacity of these lakes to rear juvenile sockeye and will be extremely valuable in evaluating escapement goals and developing better fishery management strategies.

Catch and Sales: No fish are caught or sold by this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $20.0
FY 97 Authorization: $0.0
FY 97 Expenditure: $0.00
FY 96 Expenditure: $0.00

II. COOK INLET

Project Name: Offshore Test Fishing

Budget Code: 11100721-1127358
Location: Anchor Point
Timing: Late June - Late July
Contact: Ken Tarbox

Primary Objective: To provide real time estimates of the number of sockeye salmon entering the Central District of Upper Cook Inlet. This information is used by fishery management biologists to assess run strength in season and develop appropriate management strategies to ensure escapement goals are met.

Catch and Sales: A single is vessel is chartered in three year time blocks by competitive bid on a daily rate to fish a series of stations on a transect across the southern entrance to

Upper Cook Inlet. The vessel provides all food, fuel, and gear. The fish are sold by the vessel under a CFEC permit to various processors who are convenient and/or available based on the best price and service. The State is paid directly by the processors. The state receives full value for the fish and is paid the grounds price applicable at the time of delivery. In addition any salmon which are killed as a result of sampling during sonar and genetics projects are also sold under this project in a manner similar to that described above.

1994-97 Average Revenue: $26.3
FY 98 Authorization: $57.0
FY 97 Authorization: $93.6
FY 97 Expenditure: $56.7
FY 96 Expenditure: $53.3

Project Name: Fishery Monitoring

Budget Code: 11100721-1127357
Location: Soldotna
Timing: June - September
Contact: Paul Ruesch

Primary Objective: To provide in-season processing of all commercial salmon catch data and Fish Tickets, provide onboard observers for Test Fishing vessels, and monitor set gill net and drift gill net fishery operations.

Catch and Sales: No fish are caught or sold by this project.

1994-96 Average Revenue: $0.0
FY 98 Authorization: $0.00
FY 97 Authorization: $36.7
FY 97 Expenditure: $25.8
FY 96 Expenditure: $19.2

III. PRINCE WILLIAM SOUND

Project Name: Salmon Test Fish

Budget Code: 11100721-1127337
Location: Southwestern District
Timing: Late July - Early August
Contact: Dan Sharp

Primary Objective: To provide real time estimates of the volume of pink salmon entering Prince William Sound and provide coded wire tag samples for assessing contribution of wild and hatchery fish to the run as it enters. This information is used by fishery management biologists to develop appropriate management strategies to ensure wild stock

escapements are met and hatchery fish are harvested at an acceptable level of quality. This project also generates revenues that pay for operating Eshamy weir.

Catch and Sales: A number of salmon seine vessels are chartered on a daily basis using Short Term Vessel Charter agreements to fish for pink salmon in the Southwestern District of Prince William Sound. Vessels are selected from those volunteering using a rotational pattern. Payment is $800.00 per day. The vessel provides all food, fuel, and gear. The fish are sold by the vessel in the name of the State under a CFEC permit to various processors who are convenient and available based on the best price and service. The State is paid directly by the processors. The state receives full value for the fish and is paid the grounds price applicable at the time of delivery.

1994-97 Average Revenue: $69.1
FY 98 Authorization: $89.8
FY 97 Authorization: $89.8
FY 97 Expenditure: $25.2
FY 96 Expenditure: $81.5

HERRING TEST FISH PROJECTS

I. BRISTOL BAY

Project Name: In-season Herring Test Fish

Budget Code: 11100721-1127459
Location: Togiak District
Timing: May
Contact: Jeff Regnart

Primary Objective: To collect abundance calibration estimates, age and sex composition, and quality information from herring in the commercial fishing district. These information are used by herring managers to expand their aerial survey estimates to total abundance estimates. In addition, age, sex, and quality information is used in conjunction with commercial catch samples to develop year class abundance estimates for Togiak herring. This project generates the revenue necessary to pay for itself as well as the post-season sampling and spawn-on-kelp studies.

Catch and Sales: Herring are harvested by purse seine vessels utilizing spotter pilots. All processors who have filed an Intent to Operate in the Togiak herring fishery are sent a bid solicitation for the opportunity to purchase a specified number of tons of herring. Part of the bid requirement is to not only purchase the herring, but to provide the purse seine vessel, skipper, purse seine, equipment, fuel, and logistics to capture the herring. The bid is awarded to the processor who submits a bid for the highest price per ton. ADF&G

personnel are onboard the fishing vessels during test fish operations. In addition, an ADF&G biologist responsible for aerial surveys of herring is onboard a leased helicopter and directs the activities of the purse seine vessel. The fish are sold by ADF&G personnel under a CFEC permit to the processor who was awarded the bid. The State is paid directly by the processor based on the number of tons of herring harvested, the roe percent, and the price outlined in the successful bid.

1994-97 Average Revenue: $156.4
FY 98 Authorization: $20.0
FY 97 Authorization: $20.0
FY 97 Expenditure: $41.1
FY 96 Expenditure: $14.1

Project Name: Post-season Herring Test Fish (New Project)

Budget Code: 11100721-1127459
Location: Togiak District
Timing: Late May - Early June
Contact: Kathy Rowell

Primary Objective: This is a new project designed to collect information on the abundance and age and sex composition of herring in the Togiak area following the completion of the commercial fishery. This information will improve estimates of the abundance and survival of younger age classes of herring and should result in more accurate forecasts of the abundance of younger age classes in future years.

Catch and Sales: Herring harvested during this project will be small in numbers and used for age, sex, size sampling. No herring are expected to be sold. Revenue from the in-season test fishery will pay for this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $42.5
FY 97 Authorization: $0. 0
FY 97 Expenditure: $0.0
FY 98 Expenditure: $0.0

Project Name: Spawn On Kelp Studies (New Project)

Budget Code: 11100721-1127459
Location: Togiak District
Timing: Late May - Early June
Contact: Jim Browning, Kathy Rowell

Primary Objective: This is a new project designed to collect information on the abundance of kelp in areas which have been commercially harvested in recent years. This information will provide estimates of mortality of herring spawning substrate in areas important to both herring spawning and to the commercial fishery.

Catch and Sales: Spawn on kelp harvested during this project will be small in quantity and used only for necessary sampling. No herring or kelp are expected to be sold. Revenue from the in-season test fishery will pay for this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $61.1
FY 97 Authorization: $0.0
FY 97 Expenditure: $0.0
FY 98 Expenditure: $0.0

II. COOK INLET

Project Name: Herring Test Fish

Budget Code: 11100721-1127447
Location: Kamishak Bay District
Timing: Late April - Late May
Contact: Wes Bucher

Primary Objective: To collect abundance calibration estimates, age and sex composition, and roe quality information from herring in the commercial fishing district. This projects also allows collection of samples from the time period following the commercial fishery in order to include younger age classes of herring in all analyses. These information are used by herring managers to expand their aerial survey estimates to total abundance estimates. In addition, age, sex, and quality information is used in conjunction with commercial catch samples to develop year class abundance estimates for Kamishak Bay herring and forecast future returns.

Catch and Sales: Herring are harvested by purse seine vessels utilizing spotter pilots. All processors who have registered filed for Kamishak Bay herring fishery are sent a bid solicitation for the opportunity to purchase a specified number of tons of herring. Part of the bid requirement is to not only purchase the herring, but to provide the purse seine vessel, skipper, purse seine, equipment, fuel, and logistics to capture the herring. The bid is awarded to the processor who submits a bid for the highest price per ton. ADF&G personnel are onboard the fishing vessels during test fishing operations. In addition, an ADF&G biologist responsible for aerial surveys of herring is onboard the spotter plane and helps directs the activities of the purse seine vessel. The fish are sold by ADF&G personnel in the name of the State under a CFEC permit to the processor who was awarded the contract. The State is paid directly by the processor based on the number of tons of herring harvested, the roe percent, and the price outlined in the successful bid.

1994-97 Average Revenue: $7.5
FY 98 Authorization: $30.0
FY 97 Authorization: $30.0
FY 97 Expenditure: $28.7

FY 96 Expenditure: $27.2

III. PRINCE WILLIAM SOUND

Project Name: Herring Test Fish

Budget Code: 11100721-1127437
Location: Prince William Sound
Timing: April
Contact: Steve Morstad

Primary Objective: To collect aerial survey and acoustic biomass estimates and to calibrate those estimates as well as to collect size, age, and sex composition information from herring in the commercial fishing district before, during and after the commercial fishery. This projects has been recently expanded to allows collection of adequate samples from the time period following the commercial fishery in order to include younger age classes of herring in all analyses. This information is used by herring managers and researchers to expand their aerial survey estimates to total abundance estimates which can be compared with acoustic estimates and to forecast herring return in future years. The increased authorization for FY 98 is to pay the cost of hydro-acoustic surveys.

Catch and Sales: Herring are harvested by purse seine vessels utilizing spotter pilots. All processors who have registered for the Prince William Sound Bay herring fishery are sent a bid solicitation for the opportunity to purchase a specified number of tons of herring. Part of the bid requirement is to not only purchase the herring, but to provide the purse seine vessel, skipper, purse seine, equipment, fuel, and logistics to capture the herring. The bid is awarded to the processor who submits a bid for the highest price per ton. ADF&G personnel are onboard the fishing vessels during test fishing operations. In addition, an ADF&G biologist responsible for aerial surveys of herring is onboard the spotter plane and helps directs the activities of the purse seine vessel. The fish are sold by ADF&G personnel under a CFEC permit to the processor who was awarded the contract. The State is paid directly by the processor based on the number of tons of herring harvested, the roe percent, and the price outlined in the successful bid.

1994-97 Average Revenue: $17.8
FY 98 Authorization: $57.3
FY 97 Authorization: $17.3
FY 97 Expenditure: $17.3
FY 96 Expenditure: $11.9

SHELLFISH/GROUNDFISH TEST FISH PROJECTS

I. COOK INLET

Project Name: Shellfish/Groundfish Stock Assessment

Budget Code: 11100721-1127483
Location: Lower Cook Inlet
Timing: Year Around
Contact: Bill Bechtol

Primary Objective: To support stock assessment surveys which collect data on shellfish and groundfish stocks throughout Lower Cook Inlet. Results are used to set harvest levels, time fishery openings, and gain basic biological information on the stocks. The objective of this project has shifted from Dungeness crab soft shell surveys to stock assessment for any shellfish or groundfish stock where such a program is necessary or desirable.

Catch and Sales: Vessels are hired by competitive bid using a Short Term Vessel Charter. Fish and shellfish are sold in the State's name under a CFEC permit to local processors based on a combination of the best price, availability, and service. The State is paid directly by the processors. The state receives full value for the fish and is paid the grounds price applicable at the time of delivery. Some crab stocks in Lower Cook Inlet are too depressed to justify harvesting significant quantities to pay for the program. Therefore to the maximum extent possible, crabs are returned to the sea alive. For this reason, little use was made of this project when it only addressed Dungeness crab.

1994-97 Average Revenue: $0.1 (FY 96, 97 only)
FY 98 Authorization: $20.0
FY 97 Authorization: $12.0
FY 97 Expenditure: $6.1
FY 96 Expenditure: $9.8

II. PRINCE WILLIAM SOUND

Project Name: Groundfish Assessment

Budget Code: 11100721-1127466
Location: Prince William Sound
Timing: February, September
Contact: Bill Bechtol

Primary Objective: To estimate abundance of pollock using hydro-accoustic methods and relative abundance of sablefish using catch per unit of effort data in Prince William Sound. Biological information is collected as necessary from the fish harvested.

Catch and Sales: The two species are handled somewhat differently. For pollock, processors bid competitively on a set amount of pollock estimated to provide sufficient revenue to pay the costs of doing the hydro-accoustic survey. The contract is awarded to the processor bidding the highest price per ton of pollock. Part of the bid requirement is to provide the gear, vessel, skipper, fuel, and logistics to capture the pollock. Pollock are sold by ADF&G personnel in the name of the State under a CFEC permit. State is paid directly by the processor based on the number of tons of pollock purchased and the price offered in the successful bid. The hydro-accoustic abundance survey is conducted independently of the pollock harvesting operation, since timing of the survey is dependent on the desired biological information and the availability of staff or contractors suitable to do this highly specialized work. If a private vessel is contracted to do the hydro-accoustic survey this is accomplished by competitive bid through a Short Term Vessel Charter.

For sablefish, processors bid competitively on the estimated amount of sablefish which will be harvested during the actual test fishing operation which is conducted from the ADF&G vessel Montague utilizing commercial style long line gear. The contract is awarded to the processor bidding the highest price per pound of sablefish. Sablefish are sold by ADF&G personnel in the name of the State under a CFEC permit to the processor who submitted the successful bid. State is paid directly by the processor based on the number of pounds of sablefish purchased and price offered in the successful bid.

1994-97 Average Revenue: $44.9 (FY 96, 97 only)
FY 98 Authorization: $50.0
FY 97 Authorization: $42.6
FY 97 Expenditure: $65.2
FY 96 Expenditure: $25. 8

Project Name: PWS Shellfish Stock Assessment

Budget Code: 11100721-1127472
Location: Prince William Sound
Timing: Year Around
Contact: Bob Berceli

Primary Objective: To support stock assessment surveys where fisheries have been closed and the Dept. lacks programs to monitor rebuilding or where there are new and developing fisheries for which little or no information exists. This project also funds onboard observers to collect data during commercial fisheries.

Catch and Sales: Either an ADF&G vessel is used or else private vessels are hired by competitive bid using a Short Term Vessel Charter. Shellfish are sold by ADF&G personnel in the State's name under a CFEC permit to local processors based on a combination of the best price, availability, and service. The State is paid directly by the processors. The state receives full value for the fish and is paid the grounds price applicable at the time of delivery. Most shellfish stocks in PWS are too depressed to justify harvesting in order to pay for the programs. Therefore to the maximum extent

possible, animals are returned to the sea alive. For this reason, relatively little use is made of this project.

1994-97 Average Revenue: $0.0
FY 98 Authorization: $11.7
FY 97 Authorization: $13.3
FY 97 Expenditure: $0.0
FY 96 Expenditure: $0.0

CENTRAL REGION TEST FISH SUMMARY

SALMON

I. Bristol Bay

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Kvichak River	4.2	33.3	30.2	24.5	33.3
Egegik River	2.7	31.9	32.2	25.2	38.9
Ugashik River	4.5	29.0	30.3	21.0	20.9
Igushik River	2.4	21.9	20.8	18.3	19.0
East Side District	29.6	50.0	70.5	36.5	38.7
Nushagak District	13.5	49.0	48.6	35.5	11.2
Stock ID	323.6	96.5	190.6	63.5	230.0
West Side Catch	0.0	19.4	19.4	27.1	16.7*
East Side Catch	0.0	30.0	58.9	28.0	21.5
Ugashik Smolt**	0.0	20.0	0.0	0.0	0.0
Limnology ***	0.0	20.0	0.0	0.0	0.0
Total	**378.1**	**401.0**	**501.8**	**279.6**	**430.2**

* West side catch sampling was GF funded in FY 96
** Transferred from CIP
*** New project for FY 98

II. Cook Inlet

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Offshore TF	26.3	57.0	93.6	56.7	53.3
Fishery Monit.	0.0	0.0	36.7	25.8	19.2
Total	**26.3**	**57.0**	**130.3**	**82.5**	**72.5**

III. Prince William Sound

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Salmon TF	69.1	89.8	89.8	25.2	81.5
Total	**69.1**	**89.8**	**89.8**	**25.2**	**81.5**

HERRING

I. Bristol Bay

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
In-season TF	156.4	20.0	20.0	41.1	14.1
Post-season TF*	0.0	42.5	0.0	0.0	0.0
Spawn On Kelp*	0.0	61.1	0.0	0.0	0.0
Total	**156.4**	**123.6**	**20.0**	**41.1**	**14.1**

* New projects for FY 98

II. Cook Inlet

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Herring TF	7.5	30.0	30.0	28.7	27.2
Total	**7.5**	**0.0**	**30.0**	**28.7**	**27.2**

III. Prince William Sound

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Herring TF	17.8	57.3	17.3	17.3	11.9
Total	**17.8**	**57.3**	**17.3**	**17.3**	**11.9**

SHELLFISH/GROUNDFISH

I. Cook Inlet

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
SF/GF Stock Assessment	0.1*	20.0	12.0	6.1	9.8
Total	**0.1**	**20.0**	**12.0**	**6.1**	**9.8**

* FY 96, 97 only

II. Prince William Sound

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Groundfish Stock Assmt.	44.9*	50.0	42.6	65.2	25.8
Shellfish Stock Assmt.	0.0	11.7	13.3	0.0	0.0
Total	**44.9**	**61.7**	**55.9**	**65.2**	**25.8**

* FY 96, 97 only

CENTRAL REGION TEST FISH TOTAL

Project	FY94-97 Revenue	FY 98 Authorized	FY 97 Authorized	FY 97 Expenditure	FY 96 Expenditure
Total	**700.2**	**840.4**	**857.0**	**553.0**	**673.0**

APPENDIX 2

A PROGRAM FOR IMPROVING MANAGEMENT AND RESEARCH OF BRISTOL BAY SALMON

GENERAL FUND PROJECT BLUEBOOK

INTRODUCTION TO BRISTOL BAY SALMON FISHERIES

Bristol Bay supports the largest and most valuable commercial fishery for sockeye salmon in the world. About 2,900 Limited Entry permit holders and up to about 45 processing firms have participated in this fishery. Each permit holder usually hires additional crew members, and each processing firm hires many permanent and seasonal workers. The ex-vessel value of the harvest ranged from about $131,000,000 to $199,000,000 during the period 1987 to 1996, making this fishery an important element in the Alaskan economy. Of the 2,900 permit holders, over 1,700 are Alaska residents and about 900 of these live within the Bristol Bay region. For many individuals living in Bristol Bay, commercial salmon fishing and processing represent the only opportunities for local employment.

Sockeye salmon runs in Bristol Bay had fallen to extremely low levels in the early 1970's. In an effort to restore runs, the State of Alaska began to invest an increasing amount of General Fund dollars into improved management, expanded research, and comprehensive planning. By the late 1970's runs had increased to record levels due to favorable environmental conditions, curtailment of high seas fishing, and enhanced management capability by the Alaska Department of Fish and Game (ADF&G). These high levels of production peaked in 1994 when 44,000,000 sockeye salmon were harvested. Since that time, runs have been declining, and the 12,000,000 sockeye salmon harvested in 1997 was the lowest catch since 1978. Coupled with low prices, this poor harvest led the Governor to declare Bristol Bay an economic disaster area in August of 1997.

MANAGEMENT OF BRISTOL BAY SALMON FISHERY

Sockeye salmon runs in Bristol Bay are primarily produced in the lakes and tributaries of eight major river systems: Ugashik, Egegik, Naknek, Kvichak, Nushagak, Wood, Igushik and Togiak. In addition a number of smaller rivers, such as Igushik, Alagnak, Kulukak and Snake, produce smaller runs. Sockeye salmon returning to each major river system are managed to achieve biological escapement goals, which are generally set to produce maximum sustained yield. In order to facilitate discrete stock management, commercial fishing has been limited to five relatively small fishing districts near the mouths of the major systems: Ugashik, Egegik, Naknek/Kvichak, Nushagak, and Togiak Districts. Districts with more than one major spawning systems have also been divided into sections to better focus fishing effort on discrete stocks. Returns to each major river system are managed independently based on data from a series of projects which provide detailed information about expected and actual run status.

Some projects provide data used to develop preseason run forecasts and set biological escapement goals. This information is used by ADF&G for preseason planning, by suggesting the amount of harvest each run may be able to sustain, to set June South Peninsula fishery sockeye salmon quotas, and to ensure that high sustained yield is maintained. Forecasts are also used by the commercial fishing industry. Processors use forecasts to help them make decisions concerning the number of employees to hire, the

amount of supplies and materials to purchase, and the number of tenders to contract. Fishers use forecasts to help them make decisions concerning the number of crew members to hire, the amount of supplies and gear to purchase, and the districts to fish. Data used to develop forecasts are obtained from smolt (on the Kvichak, Egegik and Ugashik Rivers), catch (in all five districts), escapement (on all eight major river systems), and scale aging projects.

As adult sockeye salmon begin to enter Bristol Bay waters, they are sampled in gillnets at stations along a transect offshore of Port Moller in an industry operated test fishery. This project gives both participating processors and ADF&G a sense of total run size and, by examining age and length of sampled sockeye salmon, also provides insight district run sizes. For example if Port Moller test fishing suggests that both the total run and the proportion of sockeye salmon which have spent two years in the ocean (2-ocean) are greater than preseason expectations, it is likely that one or more of the river systems dominated by 2-ocean sockeye salmon will have greater than expected runs.

As sockeye salmon arrive in individual districts, data from commercial catches, district test fisheries, and aerial surveys are used to assess run size and timing. As sockeye salmon move out of districts into rivers, their abundance is first monitored by inriver test fisheries (on Kvichak, Egegik, Ugashik and Igushik Rivers) and aerial surveys before they reach sites where towers (on Kvichak, Naknek, Egegik, Ugashik, Wood, Igushik, and Togiak Rivers) or sonar equipment (on Nushagak River) provide final escapement estimates, and sampling programs provide estimates of the sex, age, and length of the spawning population. Aerial surveys are also used both to monitor the distribution of spawners in some of the major systems as well as to index spawning escapement into systems without tower or sonar projects.

Inriver test fishing projects are very important inseason management tools since they provide escapement estimates two to seven days before actual tower counts can be obtained. This information decreases the risk of making errors in harvesting sockeye salmon and meeting biological escapement goals. Such errors result in lost present and future revenues for commercial fishers and processors as well as state and local governments. For example, the Egegik River has a biological escapement goal range of 800,000 to 1,400,000 sockeye salmon with a point target of one million. If, during the early part of the season, the tower count was 550,000 and inriver test fishing indicated only 20,000 sockeye salmon had entered the river that day, a manager might wait before opening the fishery. On the other hand, if inriver test fishing indicated that 200,000 sockeye salmon had entered the river, the manager may allow fishing since the lower end of the escapement goal range was being quickly approached (450,000 + 200,000 = 750,000; only 50,000 from the lower end of the range).

EFFECTS OF GENERAL FUND REDUCTIONS ON PROJECTS

Over the last ten years many Bristol Bay General Fund projects have been discontinued due to budget reductions, shifted to less stable sources of funding such as Test Fish Fund Program Receipts, Fish and Game Funds, and Cooperative Agreements with local governments, federal agencies and universities. Port Moller offshore test fishing is currently conducted by the University of Washington, Fisheries Research Institute, under a Cooperative Agreement with ADF&G. Funding for the vessel charter, gillnets, and onboard samplers is provided by various fish processors, while ADF&G ages scales collected from captured sockeye salmon using Test Fish Fund Program Receipts. Smolt projects on Naknek, Wood, and Nuyakuk Rivers have been discontinued, but the smolt project on Ugashik River has been operated by ADF&G under a Cooperative Agreement with Lake and Peninsula Borough. Funding is a mix of Test Fish Fund Program Receipts and funds provided by the Borough. Catch sampling and scale aging projects have been shifted to Test Fish Fund Program Receipts. Projects for estimating adult escapement have been discontinued on Branch (counting towers) and Snake (weir) Rivers, while the Nuyakuk tower project only has short term funding under the Fish and Game Fund.

PROPOSED PROJECTS

Many important projects are not conducted due to lack of funding. These projects fall into two broad categories. First are projects which will improve management of commercial fisheries. These projects will ensure that biological escapement goals are met and fishers are provided opportunities to harvest the available surplus. Second are projects which will improve forecasting and increase our understanding of sockeye salmon production in Bristol Bay. These projects will provide better information for ADF&G and the fishing industry to plan and carry out their operations, and will ensure that biological escapement goals are set correctly. No attempt was made to prioritize these projects either within or among groups. Some projects currently operated and funded by Test Fish Receipts are included because they cannot generate sufficient revenues to pay for their operation. All revenues used to pay for Test Fish Fund Program Receipts projects come from the harvest of salmon that would otherwise be available for harvest by permit holders. Funding these project through state General Funds will make these salmon available for commercial harvest. A table summarizing the cost of operating each project, each project group, and all projects listed is included on the following page. Descriptions of individual projects are grouped by project type as follows:

Summary of Proposed Bristol Bay Salmon Projects and Estimated Costs (thousands of dollars)

Project Title	*Annual Cost*	*Initial Cost*
Kvichak Inriver Test Fishing	$34.0	$34.0
Naknek Inriver Test Fishing	$34.0	$54.0
Egegik Inriver Test Fishing	$34.0	$34.0
Ugashik Inriver Test Fishing	$32.0	$32.0
Igushik Inriver Test Fishing	$23.0	$23.0
Togiak Inriver Test Fishing	$32.5	$52.5
Subtotal for Inriver Test Fishing	*$ 189.5*	*$ 229.5*
West Side Catch Sampling	$20.0	$20.0
East Side Catch Sampling	$30.0	$30.0
Bristol Bay Scale Processing	$50.0	$50.0
Subtotal for Aging and Catch Sampling	*$ 100.0*	*$ 100.0*
Genetic Stock Identification	$250.0	$250.0
Subtotal for Stock Identification	*$ 250.0*	*$ 250.0*
Naknek River Sockeye Smolt Enumeration	$55.0	$55.0
Ugashik River Sockeye Smolt Enumeration	$42.0	$42.0
Nuyakuk River Sockeye Smolt Enumeration	$50.0	$50.0
Wood River Sockeye Smolt Enumeration	$55.0	$55.0
Subtotal for Smolt Enumeration	*$ 202.0*	*$ 202.0*
Naknek-Kvichak District Juvenile Sockeye Assessment	$100.0	$100.0
Egegik District Juvenile Sockeye Assessment	$75.0	$75.0
Ugashik District Juvenile Sockeye Assessment	$75.0	$75.0
Nushagak District Juvenile Sockeye Assessment	$100.0	$100.0
Togiak District Juvenile Sockeye Assessment	$75.0	$75.0
Subtotal for Juvenile Sockeye Assessment	*$ 425.0*	*$ 425.0*
Distribution and Abundance of Juvenile and Adult Sockeye	$25.0	$25.0
Distribution and Abundance of Juvenile and Adult Chinook and Coho	$40.0	$40.0
Branch River Sockeye Escapement Enumeration	$35.0	$35.0
Nuyakuk River Sockeye Escapement Enumeration	$35.0	$35.0
Kulukak River Sockeye Escapement Enumeration	$35.0	$60.0
Togiak River Sockeye Escapement Enumeration	$50.0	$120.0
Video Technology for Salmon Escapement Enumeration	$40.0	$40.0
Nushagak River Sonar Improvements	$35.0	$35.0
Subtotal for Small System Escapement Enumeration	*$ 295.0*	*$ 390.0*
Ugashik District Sockeye Sonar Assessment	$50.0	$50.0
Subtotal for In-season Run Assessment	*$ 50.0*	*$ 50.0*
Grand Total	*$1,511.5*	*$1,646.5*

I. INRIVER TEST FISHING

Inriver test fishing projects are important inseason management tools since they provide escapement estimates two to seven days before actual tower counts can be obtained. These projects provide information that helps managers achieve biological escapement goals and allow for harvest of the available surplus. Four of these projects (Ugashik, Egegik, Kvichak, and Igushik) are currently funded under Test Fish Fund Program Receipts but do not generate sufficient revenue to pay for their operation. To make up this revenue shortfall, additional harvests must be made ADF&G. Placing these projects on General Funds would reduce the need for ADF&G to harvest sockeye salmon to generate project revenues. Adding inriver projects on the Naknek and Togiak Rivers would improve management of those districts. Greatest improvement might be achieved for Togiak District where sockeye salmon travel time from river mouth to tower site can be ten days.

Project Name: Kvichak Inriver Test Fishing

Location: Kvichak River

Primary Objective: To provide real time estimates of the number of sockeye salmon adults which have escaped the commercial fishery and entered the Kvichak River.

Description: This is an existing inriver test fishing project funded under ADF&G Test Fish Fund Program Receipts. ADF&G personnel catch sockeye salmon in the Kvichak River in a 25 fathom drift gillnet fished daily at two sites located on opposite river banks prior to every high slack tide. This information is used to estimate the number of sockeye salmon which have escaped the commercial fishery and entered the Kvichak River to spawn. Since about 80% of the run occurs within a two week period, and there is one to three day delay in counting salmon at upriver towers, early estimates of escapement from the test fishery are used to control the commercial harvest and achieve the biological escapement goal. Although salmon are sold by ADF&G personnel in the name of the State under a special permit, it is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $34.0

Project Name: Naknek Inriver Test Fishing

Location: Naknek River

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Naknek River.

Description: This would be a new inriver test fishing project. ADF&G personnel will catch sockeye salmon in the Naknek River in a 25 fathom drift gillnet fished daily at two sites

located on opposite river banks prior to every high slack tide. This information will used to estimate the number of sockeye salmon which have escaped the commercial fishery and entered the Naknek River to spawn. Although there is usually only about a one day delay in counting salmon at upriver towers, early estimates of escapement from the test fishery will still be useful to control the commercial harvest and achieve the biological escapement goal since very large numbers of sockeye salmon can quickly enter the Naknek River. Although salmon will be sold by ADF&G personnel in the name of the State under a special permit, it will not be possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $34.0 (Purchase of boat, outboard motor, and gillnets would increase the first year cost to about $54.0.)

Project Name: Egegik Inriver Test Fishing

Location: Egegik River

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Egegik River.

Description: This is an existing inriver test fishing project funded under ADF&G Test Fish Fund Program Receipts. ADF&G personnel catch sockeye salmon in the Egegik River in a 25 fathom drift gillnet fished daily at two sites located on opposite river banks prior to every high slack tide. This information is used to estimate the number of sockeye salmon which have escaped the commercial fishery and entered the Egegik River to spawn. Since about 80% of the run occurs within a two week period, and there is a delay of one to five days in counting salmon at upriver towers, early estimates of escapement from the test fishery are used inseason to control the commercial harvest and achieve the biological escapement goal. Although salmon are sold by ADF&G personnel in the name of the State under a special permit, it is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $34.0

Project Name: Ugashik Inriver Test Fishing

Location: Ugashik River

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Ugashik River.

Description: This is an existing inriver test fishing project funded under ADF&G Test Fish Fund Program Receipts. ADF&G personnel catch sockeye salmon in the Ugashik River in a 25 fathom drift gillnet fished daily at two sites located on opposite river banks prior to every high slack tide. This information is used to estimate the number of sockeye salmon

which have escaped the commercial fishery and entered the Ugashik River to spawn. Since about 80% of the run occurs within a two week period, and there is one to three day delay in counting salmon at upriver towers, early estimates of escapement from the test fishery are used in-season to control the commercial harvest and achieve the biological escapement goal. Although salmon are sold by ADF&G personnel in the name of the State under a special permit, it is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $34.0

Project Name: Igushik Inriver Test Fishing

Location: Igushik River

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Igushik River.

Description: This is an existing inriver test fishing project funded under ADF&G Test Fish Fund Program Receipts. ADF&G personnel catch sockeye salmon in the Igushik River in a 25 fathom drift gillnet fished daily at two sites located on opposite river banks prior to every high slack tide. This information is used to estimate the number of sockeye salmon which have escaped the commercial fishery and entered the Igushik River to spawn. Since about 80% of the run occurs within a two week period, and there is delay of one to six days in counting salmon at upriver towers, early estimates of escapement from the test fishery are used in-season to control the commercial harvest and achieve the biological escapement goal. Although salmon are sold by ADF&G personnel in the name of the State under a special permit, it is not possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $23.0

Project Name: Togiak Inriver Test Fishing

Location: Togiak River

Primary Objective: To provide real time estimates of sockeye salmon adults which have escaped the commercial fishery and entered the Togiak River.

Description: This would be a new inriver test fishing project. ADF&G personnel will catch sockeye salmon in the Togiak River in a 25 fathom drift gillnet fished daily at two sites located on opposite river banks prior to every high slack tide. This information will used to estimate the number of sockeye salmon which have escaped the commercial fishery and entered the Togiak River to spawn. Since it takes sockeye salmon seven to 10 days to reach upriver towers once they enter the River, early estimates of escapement from the test fishery will allow managers to better control the commercial harvest and achieve the

biological escapement goal. Although salmon will be sold by ADF&G personnel in the name of the State under a special permit, it will not be possible to generate sufficient revenues to pay for the project without compromising the project's scientific purposes.

Estimated Cost: $32.5 (Purchase of boat, outboard motor, and gillnets would increase the first year cost to about $52.5.)

II. SALMON AGING AND CATCH SAMPLING

Salmon aging (both smolt and adult) and catch sampling provide vital information needed for stock assessment, setting and modifying escapement goals, and producing forecasts. Sockeye, chum, chinook, and coho salmon are sampled from commercial catches, offshore test fish catches, and escapement enumeration sites. Information from sampling is used during the season to help assess runs to the various rivers, which is an important component in determining fishery openings and closures. Information from sampling is also used after the season to develop estimates of total return by brood year, which are needed to assess stock status as well as to set and evaluate biological escapement goals. Due to budget reductions and inflation, all funding for Bristol Bay salmon aging and catch sampling has been transferred from General Fund to Test Fish Fund Program Receipts. Since these activities do not generate revenues, ADF&G must harvest additional Bristol Bay sockeye salmon under the State's test fishing authority to conduct these vital projects.

Project Name: Bristol Bay Salmon Scale Processing and Aging

Location: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts

Primary Objective: To process, age, and compile data obtained from scales collected from Bristol Bay salmon projects .

Description: Adult sockeye, chum, chinook and coho salmon scales obtained from commercial catches, test fishing catches, escapement samples, and smolt samples are processed, read, and cataloged. Ages, as well as additional information on sex, length, and weight, are entered into a computer database for use in constructing brood year production tables and tracking age and growth trends.

Estimated Cost: $50.0

Project Name: West Side Catch Sampling

Location: Nushagak and Togiak Districts

Primary Objective: To collect biological information from sockeye, chinook, chum, and coho salmon sampled from Nushagak and Togiak Districts commercial catches.

Description: Sockeye, chinook, chum and coho salmon are sampled from dockside and floating processors located in Dillingham, Ekuk, and Togiak. Information collected includes species, length, weight, sex, and a scale for age determination. Data are used to estimate age, sex, and size composition of commercial catches. This information is used to construct brood year tables needed to track production, examine spawning goals, and forecast adult returns.

Estimated Cost: $20.0

Project Name: East Side Catch Sampling

Location: Naknek-Kvichak, Egegik, and Ugashik Districts

Primary Objective: To collect biological information from sockeye, chinook, and chum salmon sampled from Naknek-Kvichak, Egegik, and Ugashik Districts commercial catches.

Description: Sockeye, chinook, chum and coho salmon are sampled from dockside and floating processors located in Naknek-Kvichak, Egegik, and Ugashik Districts. Information collected includes species, length, weight, sex, and a scale for age determination. Data are used to estimate age, sex, and size composition of commercial catches. This information is used to construct brood year tables needed to track production, examine spawning goals, and forecast adult returns.

Estimated Cost: $30.0

III. STOCK IDENTIFICATION

Discrete stock management has been an important objective of the Bristol Bay sockeye salmon fishery. To accomplish this, commercial fishing has been limited to five relatively small fishing districts near the mouths of the major river systems (Ugashik, Egegik, Naknek/Kvichak, Nushagak, and Togiak Districts). Districts with more than one major spawning systems (Naknek-Kvichak, Nushagak and Togiak) have also been divided into sections to better focus fishing effort on discrete stocks. Returns to each major river system are managed independently to achieve biological escapement goals. Some level of mixed stock harvest still occurs within each district and section, and this remains a contentious issue among permit holders, particularly set gillnet operators limited to available beach sites and drift gillnet operators preferring to fish in a particular district. Information on catch contributions and the distribution of various stocks within Bristol Bay eastside districts (Naknek-Kvichak, Egegik and Ugashik) was obtained for a series of years using scale pattern analysis (SPA). This technique used differences in growth, usually during the time of freshwater residence, to differentiate among stocks. While valuable information was collected, SPA could only be used for postseason analyses. Additionally, increasing variability in freshwater growth within some stocks as well as

decreasing differences in growth among other stocks diminished the usefulness of this technique in Bristol Bay. The SPA project was discontinued after the 1995 season. In recent years, ADF&G has developed genetic stock identification tools which have provided valuable information and been used as both in- and postseason management tools for other areas. Development of genetic stock identification tools for use in Bristol Bay sockeye salmon management could provide more accurate and precise estimates of catch contributions than SPA. Also, since genetic differences tend to remain stable over long periods of time, models would not have to be updated each year and could be used inseason. This information would be helpful to both ADF&G and the Alaska Board of Fisheries to develop new and modify existing management plans and harvesting strategies.

Project Name: Genetic Stock Identification

Location: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts

Primary Objective: To obtain accurate and precise estimates of the stock composition of sockeye salmon catches.

Description: Samples from sockeye salmon collected at major spawning sites within each District will be processed and analyzed at the Anchorage Genetics Laboratory. Various techniques may be examined and used. These might include mitochondrial DNA analysis of scales and various body tissues, and protein electrophoresis of various body tissues. It will take several years to sample and analyze data from the many spawning populations to adequately describe stock groupings and develop models that will provide stock mixture estimates of sufficient accuracy and precision.

Estimated Cost: $250.0

IV. SOCKEYE SALMON SMOLT ENUMERATION

Smolt migrating seaward from several major river systems have been counted using Bendix sonar equipment and sampled using fyke nets. These projects have provided important information to forecasting runs, evaluate biological escapement goals, and separate mortality into freshwater and marine components. In the past, ADF&G operated smolt projects on Kvichak, Naknek, Egegik, Ugashik, Wood and Nuyakuk Rivers. Currently only Kvichak and Egegik River smolt projects are operated under the General Fund. The Ugashik River smolt project, which was eliminated from the General Fund budget, has been operated under a Cooperative Agreement among ADF&G, the City of Pilot Point, and Lake and Peninsula Borough. Under this Agreement, ADF&G provides about one third of the total funding from Test Fish Fund Program Receipts while the other two cooperators provide the remaining funding. Unfortunately, continuation of this Cooperative Agreement may be jeopardized by both the poor run and low price in 1997, and since this project does not generate revenues, ADF&G must harvest additional Bristol Bay sockeye salmon under the State's test fishing authority to pay its share of costs.

Although the Naknek River smolt project was operated for a limited time under a Cooperative Agreement between ADF&G and the National Parks Service, it as well as smolt projects on the Wood and Nuyakuk Rivers have been lost to General Fund budget reductions. Reinstating General Fund budgets for Ugashik, Naknek, Wood and Nuyakuk smolt projects would provide important information needed to understand sockeye salmon production in Bristol Bay. Data from these projects would be used by ADF&G to improve forecast accuracy, evaluate existing biological escapement goals, develop preseason harvest strategies, and set the South Peninsula June fishery quota. Both processors and fishers would use this information to guide business decisions.

Project Name: Naknek River Sockeye Salmon Smolt Enumeration

Location: Naknek-Kvichak District

Primary Objective: To obtain estimates of the number, age, and size of sockeye salmon smolt migrating to sea from the Naknek River system..

Description: Using existing Bendix sonar equipment, sockeye salmon smolt will be counted as they migrate seaward from the Naknek River system. Age and size information will be collected from sockeye salmon smolt captured near the counting site with fyke nets or traps. Smolt numbers and biological information provide data needed to evaluate freshwater production, set biological escapement goals, and forecast adult returns.

Estimated Cost: $55.0

Project Name: Nuyakuk River Sockeye Salmon Smolt Enumeration

Location: Nushagak District

Primary Objective: To obtain estimates of the number, age, and size of sockeye salmon smolt migrating to sea from the Nuyakuk River system..

Description: Using existing Bendix sonar equipment, sockeye salmon smolt will be counted as they migrate seaward from the Nuyakuk River system. Age and size information will be collected from sockeye salmon smolt captured near the counting site with fyke nets or traps. Smolt numbers and biological information provide data needed to evaluate freshwater production, set biological escapement goals, and forecast adult returns.

Estimated Cost: $50.0

Project Name: Ugashik River Sockeye Salmon Smolt Enumeration

Location: Ugashik District

Primary Objective: To obtain estimates of the number, age, and size of sockeye salmon smolt migrating to sea from the Ugashik River system..

Description: Using existing Bendix sonar equipment, sockeye salmon smolt will be counted as they migrate seaward from the Ugashik River system. Age and size information will be collected from sockeye salmon smolt captured near the counting site with fyke nets or traps. Smolt numbers and biological information provide data needed to evaluate freshwater production, set biological escapement goals, and forecast adult returns.

Estimated Cost: $42.0

Project Name: Wood River Sockeye Salmon Smolt Enumeration

Location: Nushagak District

Primary Objective: To obtain estimates of the number, age, and size of sockeye salmon smolt migrating to sea from the Wood River system..

Description: Using existing Bendix sonar equipment, sockeye salmon smolt will be counted as they migrate seaward from the Wood River system. Age and size information will be collected from sockeye salmon smolt captured near the counting site with fyke nets or traps. Smolt numbers and biological information provide data needed to evaluate freshwater production, set biological escapement goals, and forecast adult returns.

Estimated Cost: $55.0

V. JUVENILE SOCKEYE SALMON ASSESSMENT

Juvenile sockeye salmon generally rear for one to two years in Bristol Bay freshwater lakes. Survival and growth during this time is an important factor determining future adult production. Gathering information on this aspect of their life history is important for evaluating escapement goals, forecasting returns, understanding production potential of lake systems, and separating freshwater and marine effects upon overall survival. While it may be possible to obtain estimates of actual juvenile abundance using properly designed sonar and midwater trawl surveys, the presence of other species as well as the sheer size of some rearing lakes may make such an objective unattainable. However, data concerning relative abundance, size and distribution of sockeye salmon juveniles coupled

with information on zooplankton abundance, lake chemistry and other factors, would still provide important information on sockeye salmon rearing capacity and production.

Project Name: Naknek-Kvichak District Juvenile Sockeye Assessment

Location: Naknek-Kvichak District

Primary Objective: To obtain estimates of the distribution, abundance, age, and size of sockeye salmon juveniles in Naknek-Kvichak District freshwater systems (e.g. Lake Clark, Lake Iliamna, Naknek Lakes system) as well as information on rearing conditions.

Description: Age, size, and feeding (e.g. stomach fullness, food composition) information will be collected from sockeye salmon captured in midwater trawls. Physical (e.g. temperature, conductivity, light penetration), chemical (e.g. nitrogen, phosphorous, carbon) and biological (e.g. chlorophyll a, zooplankton standing crop by species/groups) parameters will be measured at several depths. If possible, sonar surveys to estimate sockeye salmon juveniles abundance and distribution will be conducted. Information will be used to evaluate spawning escapement goals, monitor rearing conditions, and predict future returns.

Estimated Cost: $100.0 (Purchase of boat, motor, sampling equipment would either increase the first year cost or limit the amount of field work and data collection that could be accomplished.)

Project Name: Egegik District Juvenile Sockeye Assessment

Location: Egegik District

Primary Objective: To obtain estimates of the distribution, abundance, age, and size of sockeye salmon juveniles in the Becharof Lake system as well as information on rearing conditions.

Description: Age, size, and feeding (e.g. stomach fullness, food composition) information will be collected from sockeye salmon captured in midwater trawls. Physical (e.g. temperature, conductivity, light penetration), chemical (e.g. nitrogen, phosphorous, carbon) and biological (e.g. chlorophyll a, zooplankton standing crop by species/groups) parameters will be measured at several depths. If possible, sonar surveys to estimate sockeye salmon juveniles abundance and distribution will be conducted. Information will be used to evaluate spawning escapement goals, monitor rearing conditions, and predict future returns.

Estimated Cost: $75.0 (Purchase of boat, motor, sampling equipment would either increase the first year cost or limit the amount of field work and data collection that could be accomplished.)

Project Name: Ugashik District Juvenile Sockeye Assessment

Location: Ugashik District

Primary Objective: To obtain estimates of the distribution, abundance, age, and size of sockeye salmon juveniles in the Ugashik Lakes system as well as information on rearing conditions.

Description: Age, size, and feeding (e.g. stomach fullness, food composition) information will be collected from sockeye salmon captured in midwater trawls. Physical (e.g. temperature, conductivity, light penetration), chemical (e.g. nitrogen, phosphorous, carbon) and biological (e.g. chlorophyll a, zooplankton standing crop by species/groups) parameters will be measured at several depths. If possible, sonar surveys to estimate sockeye salmon juveniles abundance and distribution will be conducted. Information will be used to evaluate spawning escapement goals, monitor rearing conditions, and predict future returns.

Estimated Cost: $75.0 (Purchase of boat, motor, sampling equipment would either increase the first year cost or limit the amount of field work and data collection that could be accomplished.)

Project Name: Nushagak District Juvenile Sockeye Assessment

Location: Nushagak District

Primary Objective: To obtain estimates of the distribution, abundance, age, and size of sockeye salmon juveniles in Nushagak District freshwater systems (e.g. Wood, Tikchik, Igushik lake systems) as well as information on rearing conditions.

Description: Age, size, and feeding (e.g. stomach fullness, food composition) information will be collected from sockeye salmon captured in midwater trawls. Physical (e.g. temperature, conductivity, light penetration), chemical (e.g. nitrogen, phosphorous, carbon) and biological (e.g. chlorophyll a, zooplankton standing crop by species/groups) parameters will be measured at several depths. If possible, sonar surveys to estimate sockeye salmon juveniles abundance and distribution will be conducted. Information will be used to evaluate spawning escapement goals, monitor rearing conditions, and predict future returns.

Estimated Cost: $100.0 (Purchase of boat, motor, sampling equipment would either increase the first year cost or limit the amount of field work and data collection that could be accomplished.)

Project Name: Togiak District Juvenile Sockeye Assessment

Location: Togiak District

Primary Objective: To obtain estimates of the distribution, abundance, age, and size of sockeye salmon juveniles in the Togiak Lake system as well as information on rearing conditions.

Description: Age, size, and feeding (e.g. stomach fullness, food composition) information will be collected from sockeye salmon captured in midwater trawls. Physical (e.g. temperature, conductivity, light penetration), chemical (e.g. nitrogen, phosphorous, carbon) and biological (e.g. chlorophyll a, zooplankton standing crop by species/groups) parameters will be measured at several depths. If possible, sonar surveys to estimate sockeye salmon juveniles abundance and distribution will be conducted. Information will be used to evaluate spawning escapement goals, monitor rearing conditions, and predict future returns.

Estimated Cost: $75.0 (Purchase of boat, motor, sampling equipment would either increase the first year cost or limit the amount of field work and data collection that could be accomplished.)

VI. SMALL SYSTEM ESCAPEMENT ENUMERATION

Sockeye salmon escapement enumeration occurs on eight major river systems in Bristol Bay: Ugashik, Egegik, Naknek, Kvichak, Nushagak, Wood, Igushik, and Togiak Rivers. However, there are a large number of smaller river systems on which no sockeye salmon escapement enumeration is conducted, and relatively little escapement information is collected for other salmon species. Little information is also available on freshwater rearing areas for salmon other than sockeye. These types of data allow managers to monitor the status of smaller sockeye salmon populations and populations of other salmon species, which might be important in further refining management strategies. Records of spawners and juveniles are also used to identify areas that merit listing as anadromous streams. This classification affords special consideration to such waters when roads are built, minerals are extracted, timber is cut, and other human activities occur that may prove detrimental to salmon production and survival. Spawning escapement enumeration as well as identification of spawning and rearing areas provides vital and basic information needed to properly manage Bristol Bay's valuable wild salmon resources.

Project Name: Distribution and Relative Abundance of Juvenile and Adult Sockeye Salmon

Location: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts

Primary Objective: To obtain estimates of the distribution and relative abundance of sockeye salmon spawning in systems not currently assessed.

Description: Sockeye salmon spawners will be counted from fixed or rotary wing aircraft in systems (or portions of systems) not currently assessed or surveyed. This project will attempt to obtain peak counts in systems not included in the current assessment program. Such data cannot be used to estimate total escapement into these systems, since survey frequency would have to be greatly increased and information on stream life and observer efficiency would have to be collected. Peak counts, as well as presence and absence information, can be used to identify anadromous streams and monitor the status of populations not currently surveyed. Although such information is very important, its use in setting biological escapement goals and predicting future returns is very limited.

Estimated Cost: $25.0

Project Name: Distribution and Relative Abundance of Juvenile and Adult Chinook and Coho Salmon

Location: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts

Primary Objective: To obtain estimates of the distribution and relative abundance chinook and coho salmon spawning and rearing in systems not currently assessed.

Description: Chinook and coho salmon spawners will be counted from fixed or rotary wing aircraft in systems, or portions of systems, not currently assessed or surveyed. This project will attempt to obtain peak counts in systems not included in the current assessment program. Such data cannot be used to estimate total escapement into these systems, since survey frequency would have to be greatly increased and information on stream life and observer efficiency would have to be collected. Chinook and coho salmon juveniles will be captured with a variety of gear (traps, seines, etc.), and age and size will be obtained. Peak spawning counts, as well as presence and absence information for spawners and juveniles, can be used to identify anadromous streams and monitor the status of populations not currently surveyed. Although such information is very important, its use in setting biological escapement goals and predicting future returns is very limited.

Estimated Cost: $40.0

Project Name: Branch River Sockeye Salmon Escapement Enumeration

Location: Naknek-Kvichak District

Primary Objective: To obtain estimates of the number, age, size, and sex of sockeye salmon entering the Branch River to spawn.

Description: Sockeye salmon will be counted from towers on each bank of Branch River as they migrate upstream to tributary lakes and streams to spawn. Age, size and sex information will be collected from sockeye salmon captured near the counting site with beach seines. Escapement and biological information provide data needed to evaluate management strategies and set spawning escapement goals.

Estimated Cost: $35.0

Project Name: Nuyakuk River Sockeye Salmon Escapement Enumeration

Location: Nushagak District

Primary Objective: To obtain estimates of the number, age, size, and sex of sockeye salmon entering the Tikchik Lakes systems to spawn.

Description: Sockeye salmon will be counted from towers on each bank of the Nuyakuk River as they migrate upstream to tributary lakes and streams to spawn. Age, size and sex information will be collected from sockeye salmon captured near the counting site with beach seines. Escapement and biological information provide data needed to evaluate management strategies and set spawning escapement goals.

Estimated Cost: $35.0

Project Name: Kulukak River Sockeye Salmon Escapement Enumeration

Location: Togiak District

Primary Objective: To obtain estimates of the number, age, size, and sex of sockeye and other salmon entering the Kulukak River to spawn.

Description: Sockeye and other salmon will be counted either from towers on each bank of Kulukak River or at a floating weir as they migrate upstream to tributary lakes and streams to spawn. Age, size and sex information will be collected from all salmon species

captured near tower counting sites with beach seines or at the weir. Escapement and biological information provide data needed to evaluate management strategies and set biological escapement goals.

Estimated Cost: $35.0 (Purchase of weir or tower materials would increase the first year cost to about $60.0 or more.)

Project Name: Togiak River Sockeye Salmon Escapement Enumeration

Location: Togiak District

Primary Objective: To obtain estimates of the number, age, size, and sex of sockeye and other salmon entering the Togiak River system to spawn.

Description: Sockeye and other salmon will be counted at a floating weir as they migrate upstream to tributary lakes and streams to spawn. Age, size and sex information will be collected from all salmon species captured at the weir. Escapement and biological information provide data needed to evaluate management strategies and set spawning escapement goals for the entire Togiak River drainage. This project will provide managers with escapement estimates that can be used to make inseason decisions. Currently, sockeye escapement into Togiak Lakes is enumerated with towers. However, sockeye travel time from the fishing district to the tower site too long (about seven to 10 days) to be of great use during the season. Also, sockeye and other salmon entering into the drainage below the tower are currently counted from fixed wing aircraft, so resulting estimates are not very accurate or precise.

Estimated Cost: $50.0 (Purchase of weir materials would increase the first year cost to about $170.0.)

Project Name: Development of Video Technology for Escapement Enumeration

Location: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts

Primary Objective: To improve estimates of the number, age, size, and sex of sockeye and other salmon entering selected Bristol Bay systems to spawn.

Description: The use of video cameras to count Pacific salmon will be evaluated. This project could decrease the cost of escapement monitoring and increase the number of systems monitored. Use of video equipment would also provide a visual record of salmon passage that would be available for future review and analysis. Escapement projects

provide data needed to evaluate management strategies and set biological escapement goals.

Estimated Cost: $40.0

Project Name: **Nushagak River Sonar Improvements - Lateral Distribution of Salmon**

Location: Nushagak District

Primary Objective: To evaluate the lateral distribution of sockeye, chinook, chum, and coho salmon migrating past the Nushagak River sonar project site.

Description: Pacific salmon migrating upstream to spawn are counted with sonar equipment on each bank of the Nushagak River. Salmon captured in drift gillnets and beach seines operated at the sonar site are used to apportion blocks of sonar counts into escapement estimates by species and to collect age, size and sex information. This project would increase gillnet sampling across the entire river width to evaluate the proportion of salmon, by species, migrating beyond the range of sonar equipment.

Estimated Cost: $35.0

VII. INSEASON RUN ASSESSMENT

The sockeye salmon entry pattern into Ugashik District is quite different from than observed in other districts. Sockeye salmon bound for Ugashik River tend to mill outside of and within the District for long periods of time before entering the river quickly and often in large numbers. This behavior makes management of this district extremely difficult. Providing estimates of the number of sockeye salmon milling within the District will allow managers to more appropriately time fishery openings and closures so that the quality of harvested sockeye salmon is improved and biological escapement goals are met.

Project Name: **Ugashik District Sockeye Salmon Sonar Assessment**

Location: Ugashik District

Primary Objective: To obtain estimates of the numbers of sockeye salmon in the Ugashik District during critical times of the commercial fishing season

Description: The abundance of sockeye salmon in Ugashik District will be estimated periodically in July using data obtained from sonar surveys. This district is difficult to manage since sockeye salmon often mill within and just outside of district boundaries for several days prior to entering the Ugashik River. Estimates of the number of sockeye

salmon present within the District will assist managers in regulating commercial fishery openings and closures, achieving biological escapement goals, and improving the quality of the sockeye salmon harvest.

Estimated Cost: $50.0

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